
**Photographic Guide
for Aging Nestling**

SWAINSON'S HAWKS

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2005**



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BLM Idaho Technical Bulletin 2005-01

ACKNOWLEDGMENTS

In 2000, a Southcentral Idaho Raptor Monitoring project was funded with a Challenge Cost Share agreement between Rara Avis Consultants*, the Bureau of Land Management Burley Field Office and the Nongame Wildlife Program of the Idaho Department of Fish and Game.

Field work was done by the authors and assisted by Will Hayes, Amy Makela, and Timothy Little. Photographic editing and support was kindly provided by Jenger Smith and Charlie Kerlee at the Colorado State University Computer Assisted Teaching Support Lab (CATS).

The general format and approach were adopted from nestling aging guides by Marc Moritch (1983a, b; 1985), for Prairie Falcons, Red-tailed Hawks, and Ferruginous Hawks respectively; and Gerald R. Griggs and Karen Steenhof (1993) for American Kestrels. Inspiration for a more useful Swainson's Hawk photographic guide for field use came from the dissertation of Richard Fitzner (1980).

Thanks are also due to Stephanie Gossett for a review of the manuscript.

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INTRODUCTION

The purpose of this guide is to illustrate developmental stages of Swainson's Hawks (*Buteo swainsoni*) to assist researchers in timing nest visits for studies in growth, reproduction and nest productivity. The ability to accurately age nestlings is important for determining nest success (Mayfield 1975) and minimizing disturbance at critical nesting periods (Fyfe and Olendorff 1976).

This guide is based on observations of a single brood. A second nest was monitored with known aged young as well, but it was found that developmental rates varied, likely due to factors including nutrition and differences in habitat type. Caution is advised in aging chicks using this guide without consideration of these other factors including gender, nutrition, position in brood and brood size.

METHODS

Two Swainson's Hawk nests were studied at several day intervals from hatching to near fledging, on nests that were found during routine raptor nest monitoring in southcentral Idaho. The chicks were photographed using 35-mm black and white and color film; measurements and descriptions of the chicks were documented during each visit. Nest visits were timed to minimize disturbance, and were made during moderate weather conditions to minimize environmental exposure. The observations ended when the young were 39-41 days old, near fledging age.

RESULTS AND DISCUSSION

Nestlings remained downy until 9-10 days when primary tips began emerging. Rectrice tips began emerging at 13 days. From this period feather development made age classification more discernable. Observable developmental characteristics became more apparent as the young grew until 39-41 days when juvenile feathering was nearly complete.

Sibling aggression was observed between nestlings at 3 and 5 days old at both nests. Three young at these two nests were lost to apparent siblicide by day 20. Whether the siblicide was exacerbated by researcher disturbance, other disturbance, or lack of food from other causes was unclear. Active daily use of a pesticide applicator tractor and Lorsban (chlorpyrifos) pesticide storage occurred on private lands immediately adjacent to the second nest midway through the nesting cycle. Low nestling weights for both Swainson's and Ferruginous Hawks were also seen at a number of undisturbed nests this year. These low weights and some of the nestling losses may have been the result of poor prey availability due to drought conditions. Bechard (1983) reported high nestling mortality in SE Washington from starvation or "fratricide", citing a lack of food as the likely cause.



5, 3, and 1 day old: All are white downy, umbilicus is bare, posterior femur is bare. One day old cannot hold head up (lower right). Five day old (left) is 13 cm total length.



7 and 11 days old: Grey down with dark undertone. Seven day old (left) has bare umbilicus, no remiges or rectrices, total length is 13.5 cm. Eleven day old (right) has remiges emerging with neossoptile tips especially visible, no rectrices, total length is 14cm.



9 and 13 days old: Nine day old (left upper) is 14 cm long, has primary nubs emerging. Thirteen day old (lower right) is 18.5 cm long, is dark downy with light occiput, primary sheaths out, and rectrice nubs are emerging.



14 and 18 days old: Fourteen day old (upper) is 18 cm total length, grey-brown downy, egg tooth still present, primaries 1cm, rectrice nubs present. Eighteen day old (lower) is 22 cm total length, scapulars and primary coverts emerging, seventh primary is 3.5 cm. Both have white occiput.



20 days old: Grey-brown down, white occiput, primary feathers 5 cm, tail feathers 1.5-1.7 cm. scapular feathers 3.2 cm. Total length is 23.5 cm. Tarsus length is 6.0 cm.



25 days old: Brown woolly appearance, white occiput. Scapulars two-toned, breast- two brown single strips, legs downy. Primaries 9.4 cm, tail 4.6 cm. Head-auriculars- slight brown feathers visible. Total length (ToL) is 29 cm. Tarsus length is 6.5 cm.



27 days old: Dorsal surface 50% feathered, wide scapular stripes, wing coverts showing through down. Seventh primary length is 11.4 cm, tail length is 5.7 cm, tail coverts 2.5 cm. Head has pin feathers within down, small brown auriculars. Total length is 29.5 cm. Tarsus length is 6.6 cm.



27 days old: Ventral surface-- Belly has two feathered flank stripes (by researcher's right thumb), two barely visible belly stripes, half-dollar size bare umbilicus. Downy legs. Note small auriculars on head.



29 days old: Dorsal surfaces mostly feathered (60%) with down on back. Wing-- Seventh primary 137 mm., tail length 69 mm, tail coverts 38 mm. Head has white occiput, pin feathers on crown and occiput 3 mm., auriculars 8 mm, tan/brown. Total length is 32 cm.



29 days old: Head mostly grey downy with white occiput, pin feathers 3 mm. Small feathers-- Auriculars 8mm, tan/brown. Feathered belly stripes, bare umbilicus, one-half dollar size.



32 days old: Dorsal-- Wing well feathered, seventh primary 14.7 cm. 2.5 cm downy stripe on back. Tail length 8.6 cm, coverts 4.2 cm. Head-- Auriculars almost eye size, pin feathers out 25% on crown. Total length is 33 cm.



32 days old: Ventral-- Abdomen and breast-two feather tracts 2.5 cm wide, two axillary (flank) strips feathered about 2.5 cm wide. Legs are downy with brown speckled feathering. Light brown undertail coverts.



34 days old: Dorsal surface appears totally feathered with small downy patches each side of middle. Seventh primary 16.6 cm long, tail length is 9.7 cm. Head-30-40% of crown feathered, auriculars eye size. Total length is 36 cm, tarsus length is 7 cm.



34 days old: Ventral surface is 50% feathered, legs are mottled with about 30% feathering.